

CLAIMS

1. An optical integrated unit comprising:
a light-emitting portion (1, 21) for emitting a plurality of laser beams having
5 different wavelengths;
a phase difference plate (5);
a first hologram element (2, 12, 14, 16) for diffracting a first laser beam of said
plurality of laser beams; and
a second hologram element (3, 13, 15, 17) for diffracting a second laser beam of
10 said plurality of laser beams, wherein
said phase difference plate (5) is formed to act as a $\lambda/4$ plate for said first laser
beam and to act as a λ plate or a $\lambda/2$ plate for said second laser beam.
2. (Amended) The optical integrated unit according to claim 1, wherein
15 said light-emitting portion (1, 21) is formed such that a wavelength of said first
laser beam is shorter than a wavelength of said second laser beam,
said first hologram element (2, 12, 14, 16) has a polarization characteristic, and
said second hologram element (3, 13, 15, 17) is formed not to depend on a
polarization state.
- 20 3. (Amended) The optical integrated unit according to claim 1, wherein
said light-emitting portion (1, 21) is formed such that a wavelength of said first
laser beam is shorter than a wavelength of said second laser beam,
said first hologram element (2, 12, 14, 16) has a polarization characteristic, and
25 said second hologram element (3, 13, 15, 17) is formed not to diffract said first
laser beam and to diffract said second laser beam.
4. The optical integrated unit according to claim 1, further comprising

oscillation light division means (8a, 8b, 8c) for dividing oscillation light from said light-emitting portion (1, 21) into at least three.

5 5. The optical integrated unit according to claim 4, wherein said oscillation light division means (8b, 8c) includes

 a first oscillation light diffraction grating (8b) for dividing said first laser beam and

 a second oscillation light diffraction grating (8c) for dividing said second laser beam.

10 6. The optical integrated unit according to claim 4, wherein said oscillation light division means (8a, 8b, 8c) includes a diffraction grating formed to divide said first laser beam and said second laser beam.

15 7. The optical integrated unit according to claim 1, further comprising one light-receiving portion (4a, 4b, 4c) for receiving said plurality of laser beams, wherein said first laser beam and said second laser beam are received at said one light-receiving portion (4a, 4b, 4c).

20 8. The optical integrated unit according to claim 1, further comprising a light-receiving portion (4a, 4b, 4c) for receiving said plurality of laser beams, wherein said light-emitting portion (1, 21), said light-receiving portion (4a, 4b, 4c), said first hologram element (2, 12, 14, 16), and said second hologram element (3, 13, 15, 17) are integrated.

25 9. The optical integrated unit according to claim 1, further comprising a light-receiving portion (4a, 4b, 4c) for receiving said plurality of laser beams, wherein said light-emitting portion (1, 21), said light-receiving portion (4a, 4b, 4c), said

first hologram element (2, 12, 14, 16), and said second hologram element (3, 13, 15, 17), and said phase difference plate (5) are integrated.

10. The optical integrated unit according to claim 1, further comprising:

5 oscillation light division means (8a, 8b, 8c) for dividing oscillation light from said light-emitting portion (1, 21) into at least three; and

a light-receiving portion (4a, 4b, 4c) for receiving said plurality of laser beams, wherein

10 said light-emitting portion (1, 21), said light-receiving portion (4a, 4b, 4c), said first hologram element (2, 12, 14, 16), said second hologram element (3, 13, 15, 17), and said oscillation light division means (8a, 8b, 8c) are integrated.

11. The optical integrated unit according to claim 1, further comprising:

15 oscillation light division means (8a, 8b, 8c) for dividing oscillation light from said light-emitting portion (1, 21) into at least three; and

a light-receiving portion (4a, 4b, 4c) for receiving said plurality of laser beams, wherein

20 said light-emitting portion (1, 21), said light-receiving portion (4a, 4b, 4c), said first hologram element (2, 12, 14, 16), said second hologram element (3, 13, 15, 17), said phase difference plate (5), and said oscillation light division means (8a, 8b, 8c) are integrated.

12. The optical integrated unit according to claim 1, wherein said light-emitting portion (1, 21) is integrally formed to be separable from other portions.

13. An optical pickup device comprising:

the optical integrated unit according to claim 1; and

an objective lens (6) for collecting emitted laser beam on an information surface

of an optical disk (7).

14. (Amended) The optical pickup device according to claim 13, further comprising:

5 oscillation light division means (8a, 8b, 8c) for dividing oscillation light from said light-emitting portion (1, 21) into at least three; and

 a light-receiving portion (4a, 4b, 4c) for receiving said plurality of laser beams, wherein

10 said light-emitting portion (1, 21) is formed such that a wavelength of said first laser beam is shorter than a wavelength of said second laser beam,

 said first hologram element (2, 12, 14, 16) has a polarization characteristic,

 said second hologram element (3, 13, 15, 17) is formed not to depend on a polarization state, and

15 said light-emitting portion (1, 21), said light-receiving portion (4a, 4b, 4c), said first hologram element (2, 12, 14, 16), said second hologram element (3, 13, 15, 17), said phase difference plate (5), and said oscillation light division means (8a, 8b, 8c) are integrated.